

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)
)
Revision of Part 22 and Part 90)
of the Commission's Rules to)
Facilitate Future Development)
of Paging Systems)
)
Implementation of Section 309(j))
of the Communications Act --)
Competitive Bidding)

WT Docket No. 96-18

PP Docket No. 93-253

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COMMENTS OF PAGING NETWORK, INC.

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Summary

Paging Network, Inc. ("PageNet") hereby submits its comments in response to the Commission's Notice of Proposed Rulemaking regarding the future development of paging systems.

The Commission has proposed to license both common carrier paging ("CCP") and private carrier paging ("PCP") on a geographic basis. PageNet supports this proposal within the specific parameters discussed in these comments. To achieve geographic licensing for paging channels, the Commission must adopt: (1) a simple methodology for the paging channels auctions; (2) conduct the paging auctions quickly; and (3) modify the paging rules to create a stable environment for both incumbent and geographic licensees.

PageNet concurs with the Commission's proposal to exclude nationwide PCP systems that were constructed as of February 8, 1996, from the present geographic licensing proposal. The channels have already been assigned on a nationwide basis and nationwide PCP licensees already enjoy nationwide geographic licenses.

With respect to treatment of incumbent carriers that do not acquire the geographic license for their paging channel, these carriers should be able to operate their facilities under the existing licenses and, for PCP incumbent systems, held to the current status of their authorizations, e.g., grandfathered, exclusive, secondary or nationwide. For 931 MHz and 929 MHz, the

Commission should adopt a simple 70-mile co-channel separation standard for all systems. The Commission should also adopt a standard service area contour of 20 miles and a standard interference contour of 50 miles. Modifications of incumbent systems should be allowed as long as the composite 50-mile interference contour is not extended.

The formulas proposed by the Commission for 931 MHz and 929 MHz systems do not accurately predict the actual service area of 900 MHz systems and must not be used. In addition, the use of the formulas are needlessly complicated and the information needed to calculate the service and interference contours under these formulas is not always readily available. Finally, the Commission cannot implement the proposed contours because they would reduce the service contour and interference area currently enjoyed by 931 MHz licensees and, therefore, be an unlawful "taking" under the Fifth Amendment to the Constitution.

For the geographic licensee, the Commission should impose three hard and fast construction requirements related to the coverage of population within the geographic service area. The first construction benchmark would require the geographic licensee to cover 10% of the population of the market area within the first year. The second and third benchmarks would require the geographic licensee to cover one-third and two-thirds of the market area by the third and fifth year, respectively. In addition, the Commission should not adopt a substantial service showing for 900 MHz paging licenses. These benchmarks and the

inability to make a substantial service showing will mean that only *bona fide* applicants will participate in the auctions and that service under geographic licensing will be brought to the public more rapidly.

The Commission sought comment on whether it should impose a spectrum cap on paging carriers. A spectrum cap is not possible or practicable because: (1) the paging spectrum is already significantly licensed; (2) the paging marketplace is already highly competitive; and (3) competitors to paging in the CMRS marketplace can hold enough spectrum to have 1800 paging channels in any given area. It certainly does not seem meaningful to institute a spectrum cap when the spectrum is mostly allocated, the market competition without a cap is significant and, when one broadband competitor may hold vastly more spectrum than allocated to all of the paging channels put together.

The Commission should hold one auction for 900 MHz channels and another auction for those channels below 900 MHz. The auctions should be simultaneous and by electronic bidding. Applicants should be required to specify each frequency and the market-specific license it will be bidding upon and pay a specific up-front payment for each license it has identified on its Form 175 application. The auction for each license should close individually. The trigger for the close of each auction for a specific license should be the passing of two auction rounds with no new high bids.

Because the paging channels are already heavily licensed and most incumbents will seek the geographic license for which they already operate incumbent co-channel facilities, designated entity provisions will serve no legitimate purpose in the paging auctions and should not be adopted.

Because of the delay in service the freeze and the auction process will cause, the Commission should allow secondary licensing throughout the auction by auction participants and ultimately the winning bidder during the pendency of its application for permanent authority. In the alternative, the Commission should grant blanket authority to the winning bidders to begin operations during the pendency of their application for permanent authority. Either of these provisions will ensure that paging service is instituted as quickly as possible under the geographic license.

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Competitive Bidding)	
To: The Commission		

COMMENTS OF PAGING NETWORK, INC.

Paging Network, Inc. ("PageNet"), by its attorneys and pursuant to 47 C.F.R. §§ 1.145 and 1.149, hereby submits its comments in response to the Commission's Notice of Proposed Rulemaking in WT Docket No. 96-18 and PP Docket No. 93-253.¹ In support of these Comments, the following is respectfully shown:

I. Statement Of Interest

Created in 1982, PageNet has grown to be the largest paging company in the world. PageNet, through its subsidiaries, currently provides service to approximately 6.7 million paging units and operates thousands of common carrier paging ("CCP") and private carrier paging ("PCP") facilities throughout the United States. PageNet's prior experience in licensing, constructing,

¹ *In the Matter of Revision of Part 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems, Notice Of Proposed Rule Making, WT Docket No. 96-18 and PP Docket No. 93-253, (released February 9, 1996) ("NPRM").*

and operating paging facilities and systems makes it eminently qualified to comment on the issues raised in this proceeding.

II. Introduction & Brief Summary

By the NPRM, the Commission proposed to adopt geographic licensing for both CCP and PCP channels and to conduct spectrum auctions for the paging channels.² PageNet was an original advocate of geographic licensing for paging channels and supports the Commission's proposal to license paging channels on a geographic basis in accordance with these comments.

Geographic Licensing. In bringing geographic licensing to paging channels, the Commission should have four fundamental goals:

- (1) To promptly adopt a simple and straight-forward methodology for the paging channel auctions;
- (2) To conduct the paging channel auctions as swiftly as possible;
- (3) To simplify the paging rules which will govern the placement and operation of market area paging facilities; and
- (4) To adopt rules that allow permissive modifications to incumbent paging systems.

To achieve these goals, the Commission should adopt geographic licensing based upon Rand McNally's Major Trading Areas

² Although PageNet is licensed for paging facilities below 900 MHz, the majority of PageNet services are provided on paging channels in the 931 MHz and 929 MHz bands. As a result of this fact, PageNet's focus in these comments relates specifically to the 900 MHz paging channels. However, to the extent that PageNet's comments are applicable, PageNet requests that these comments be considered in connection with the lower band channels.

("MTAs")³. The Commission should auction the geographic licenses in two groups, the 931 MHz and 929 MHz channels, and the channels below 900 MHz. The auction for the 900 MHz channels should be initiated as soon as possible, with the auction for the below 900 MHz channels conducted directly thereafter.

Auction Rules. To ensure that the auction moves swiftly and to eliminate speculative or manipulative conduct, bidders should be required to specifically identify each and every license on which they intend to bid and pay a specific up-front payment for each of the licenses identified. No applicant should be able to bid on all of the geographic licenses unless that applicant makes an up-front payment for each and every license. In addition, the auction for each license should close individually. The trigger for the closure of a license specific auction should be the passing of two auction rounds where no new high bid is tendered for that license.

Build-Out Rules/Construction Requirements. To allow for a simple and rapid build-out of the geographic systems after the auctions, the Commission should adopt a standard co-channel separation of 70 miles for all 900 MHz paging facilities. In addition, in order to adopt a simple standard for the

³ In the NPRM at ¶ 35, the Commission noted that Rand McNally is the copyright owner of the MTA Listings and that paging services are not yet covered by a blanket license agreement with Rand McNally. The Personal Communications Industry Association ("PCIA") has undertaken the task of initiating discussions with Rand McNally regarding such blanket license.

modification of incumbent 900 MHz paging systems, the Commission should adopt a standard service area contour of 20 miles and a standard interference contour of 50 miles. Incumbent licensees that do not obtain the geographic license should be allowed to modify their systems as long as their composite interference contour is not extended.

Necessary Transition Licensing. In order to meet the immediate and ongoing demand of the paging subscribers and avoid system degradation during the pendency of permanent geographic license grants, the Commission should continue to allow secondary licensing during the auction process. Under this proposal, once an individual license specific auction has closed, only the auction winner would be eligible to file for secondary site authorization. Once the application for permanent authority is granted, the auction winner's secondary sites will become primary sites and any pending applications for secondary sites would be rendered moot.

III. Geographic Licensing On An MTA Basis Should Be Adopted For All Paging Channels

A. Geographic Licensing Will Provide Significant Advantages Over Site-Based Licensing

In the NPRM, the Commission proposed to adopt geographic licensing for paging channels.⁴ PageNet supports the geographic licensing for all paging channels because geographic licensing has significant benefits over site-by-site licensing. These benefits include:

⁴ NPRM at ¶¶ 19-21.

- Ability to immediately build-out anywhere in the geographic license area. After the geographic license has been awarded, the licensee may construct transmitter sites anywhere in the geographic area without additional application to the Commission.
- Rapid service to subscribers. Customers are provided service more rapidly because the geographic licensee is able to respond immediately to customer demand.
- Allow for better engineered systems. Systems that are designed to cover specific geographic areas benefit from the carrier's ability to design a cohesive system, rather than a system designed on a site-by-site basis. This also means that, when the carrier discovers that a transmitting site no longer functions efficiently within the design of the system, the transmitter can be relocated immediately, rather than having to await the lengthy site specific application process.
- Substantial cost savings in the licensing process. The licensee is able to reap substantial cost savings in the process of building-out and modifying its system because it no longer has to undertake a lengthy and expensive application process.
- Greater control over construction schedules and system costs. Because the geographic licensee no longer has to wait for Commission approval for each and every transmitter site, the licensee is able to more precisely plan the overall construction of the system. This means that significant capital expenditures, such as the acquisition of transmitting equipment and tower space, may be appropriately timed with the actual construction schedule for the system.⁵

⁵ Currently, PCP carriers are able to conditionally operate during the pendency of their applications for permanent authority.

- Meaningful response to paging competition. Geographic licensing will assist the paging carriers in responding to competitors, because other Commercial Mobile Radio Service ("CMRS") carriers, such as cellular, and broadband PCS, are already licensed on a geographic basis and will allow paging carriers to more readily respond to subscriber demand and create a more level playing field in which traditional paging carriers may compete with other CMRS carriers that offer paging service.
- Administrative efficiency. Geographic licensing will eliminate the inefficiencies inherent in the Commission's current paging rules and allow the Commission, the carriers, and ultimately the subscribers, to enjoy substantial administrative savings.

In light of the benefits of geographic licensing, PageNet supports geographic licensing for all paging channels, especially 931 MHz and 929 MHz paging channels.

B. Geographic Licensing On An MTA Basis Reflects The Realities Of Modern Paging Systems

In the NPRM, the Commission tentatively concluded that paging channels should be licensed on a geographic basis with the MTAs as the geographic market area.⁶ PageNet concurs.

As the Commission has previously observed, MTAs:⁷

- (1) Define regions that are large enough to permit systems to re-use spectrum efficiently;

⁶ NPRM at ¶ 34.

⁷ See Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, Notice of Proposed Rulemaking, 8 FCC Rcd 3950, 3953 (¶ 15) (1993); Amendment of the Commission's Rules to Establish New Narrowband Personal Communications Devices, Memorandum Opinion and Order, 9 FCC Rcd 1309, 1311 (¶ 14) (1994).

- (2) Provide the economies of scale necessary to allow a license to provide complete state-of-the-art service;
- (3) Allow licensees the flexibility and coverage required to fulfill their customers' desires for complete coverage throughout their particular business areas; and
- (4) Contain sufficient population and geographic area to support economically viable mobile service systems.

In addition to these significant advantages, the Commission should adopt MTA licensing for paging channels because such licensing reflects the existing geographic scope of modern paging systems. Because paging subscribers require paging service in the areas in which they live and work, and because subscribers use their paging units as a primary means of communication, most paging systems already approximate MTAs or will need growth to approximate them in order to remain competitive. Smaller geographic areas simply do not reflect the needs of paging subscribers, the flexibility required by paging carriers, and existence of paging systems that are already operating with MTA-type scope of service. Unfortunately for the paging carriers, they had to achieve this geographic scope one transmitter at a time. It would not be in the public interest to authorize systems that simply do not cover enough area to meet the needs of subscribers. The Commission should adopt geographic licensing in order to conform the rules to the current geographic scope and nature of modern paging systems.

IV. Nationwide Exclusive PCP Systems That Were Constructed As Of February 8, 1996, Should Retain The Nationwide Geographic Scope Of Their License

In the NPRM, the Commission proposed to exclude from the geographic licensing process channels that have already been assigned to licensees on a nationwide basis.⁸ PageNet concurs with this proposal because these licenses are already assigned on a nationwide basis and must be exempt as a matter of law.⁹ Simply put, in the case of PCP nationwide licensees, having met the requirements for a nationwide paging system under Section 90.495(a)(3) of the Commission's Rules,¹⁰ nationwide PCP licensees already hold nationwide geographic licenses.¹¹ Since the nationwide channels are not available for licensing by other applicants, the channels cannot be subject to the geographic licensing and auction process proposed in the NPRM for non-nationwide paging channels.

V. Treatment Of Incumbents

A. Incumbent Licensees Should Continue To Operate Under Their Existing Authorizations

In the NPRM, the Commission sought comment on whether incumbent licensees should be able to return their licenses for a single license based on service contours.¹² PageNet believes

⁸ NPRM at ¶ 26.

⁹ See, *infra*, Section V.C.3. (discussing an unconstitutional taking).

¹⁰ 47 C.F.R. § 90.495(a)(3).

¹¹ 47 C.F.R. § 90.495(b)(3).

¹² NPRM at ¶ 37.

that incumbent licensees should continue to operate under their current licenses because it is simply not an efficient use of the Commission's scarce resources to undertake the monumental task of issuing new licenses for the thousands of existing CCP and PCP call signs. In addition, because there will undoubtedly be disputes regarding the correctness of the new licenses, the issuance of new licenses to incumbent licensees may delay the time in which the auction process is completed. In turn, this will delay the time in which subscribers and carriers are able to reap the full benefits of paging systems operated under geographic licenses. If the Commission believes that the new incumbent licenses will assist the geographic licensees in the placement of co-channel facilities, the Commission should focus on a more simple method such as the mileage separation standard proposed herein.

B. 929 MHz Carriers Must Be Held To The Construction Requirements And Classifications Of Subpart P Of Part 90 Of The Commission's Rules

There are essentially four types of 929 MHz licenses under which PCP facilities are operated on exclusive channels. The four types of licenses are distinguished from each other by the co-channel protection, or lack thereof, held by each. The four types of licenses and their channel protection status are as follows:

- (1) Grandfathered licenses. Grandfathered licenses were those sought by applications filed prior to October 13, 1993, and were not later converted to exclusive status. Grandfathered licenses have no co-channel protection status. Therefore, the grandfathered licensee must share its

assigned channel with other grandfathered licensees and exclusive licensees.¹³

- (2) Local and regional exclusive licenses. Under these licenses an exclusive licensee operates a system that, constructed, met the exclusivity requirements. Grandfathered licenses, if compliant with the exclusivity rules, were also awarded exclusive licenses. Local and regional exclusive licensees enjoy generally 70-mile co-channel separation on a site-by-site basis from later-filed exclusive proposals.¹⁴ Local and regional exclusive licensees are able to share channels with grandfathered licensees that did not seek exclusivity for their grandfathered systems.
- (3) Licenses that proposed exclusive systems, but the final system did not meet the exclusivity requirements. These licenses enjoy no co-channel protection and facilities operated under these licenses operate on a secondary basis. These secondary facilities must not interfere with later-filed exclusive systems and could be subject to immediate termination of operations.
- (4) Nationwide licenses. Nationwide licensees hold geographic licenses and no other licensee may be authorized to serve new areas outside their composite interference contour on these channels.

When adopting new rules for 929 MHz paging, the Commission should maintain the current level of co-channel protection currently held by 929 MHz licensees. Specifically, incumbent licensees should enjoy no greater or no less status as a result of geographic licensing. It certainly does not seem fair that facilities that were licensed on a shared basis and facilities

¹³ Licensees that are sharing channels are under an obligation to take measures to reduce interference.

¹⁴ The minimum co-channel separation under 90.495 of the Commission's Rules is 70 miles.

from failed exclusive systems be given greater co-channel status than these facilities currently enjoy. This is particularly so with respect to those licensees that constructed systems that complied with the exclusivity rules and those licensees that proposed, but did not timely construct, exclusive systems pursuant to Section 90.495(c) of the Commission's Rules. Therefore, when adopting future rules to govern paging, the Commission should make it clear that for incumbent 929 MHz systems, the co-channel protection afforded to these systems is the co-channel protection that they held prior to the implementation of geographic licensing.

**C. Co-Channel Interference Protection To 900 MHz
Paging Incumbents Should Not Be Modified**

**1. The Formulas Proposed For Service And
Interference Contours Do Not Accurately
Reflect The Service And Interference Areas Of
900 MHz Paging Systems**

In the NPRM, the Commission proposed formulas for the calculation of both the service and interference contours for 931 MHz and 929 MHz paging facilities.¹⁵ PageNet vigorously opposes the proposed formulas because: (1) they are a radical departure from the service and interference standards under which the 900 MHz paging systems were built; (2) they do not accurately reflect the service area and interference area required by 900 MHz paging systems; (3) the information needed to calculate co-channel separation is not readily available from a reliable source; and (4) they consist of an unlawful taking.

¹⁵ NPRM at ¶¶ 49-55.

There is no question that the proposed formulas are a radical departure from the Commission's current rules regarding 900 MHz paging facilities. PageNet finds it incredulous that, after utilizing a simple method of co-channel separation for 900 MHz systems, the Commission would propose a labor intensive and difficult to ascertain standard for the placement of geographic co-channel facilities. Simply, the formulas impose needless burdens and complications on 900 MHz systems without any real corresponding benefit and, as explained more fully below, would consist of an unlawful taking under the Fifth Amendment to the United States Constitution.

To evaluate the proposed formulas, PageNet retained the engineering firm of Trott Communications Group, Inc. to conduct "real world" propagation studies at various sites.¹⁶ These studies show that the formulas proposed in the NPRM do not accurately reflect the actual area of service provided by 900 MHz paging systems and drastically reduce the protection currently provided to 900 MHz paging systems. Because it is important for the Commission to fully understand that the proposed formulas do not accurately reflect paging systems in the real world, the propagation studies, which are graphically depicted at Exhibit 1 hereto, are described briefly below. Each of the studies identifies: (a) the service area as calculated by the proposed

¹⁶ See Declaration Of Raymond C. Trott, P.E., attached hereto as Exhibit 1 ("Trott Declaration"). The propagation studies are exhibits to the Trott Declaration.

formula; (b) the service area defined by a 20-mile contour;¹⁷ (c) the interference contour as calculated by the proposed formula; and (d) a 50-mile interference contour. The white or clear area shown on the studies is the area in which a reliable paging signal would be received.¹⁸

Propagation Study Number 1. Prediction of the propagation of 900 MHz facilities in the Chicago area; 1000 watts ERP at antenna height of 372 meters (1209 feet). This study shows a reliable service area that would approximate 25 miles in all directions. The study demonstrates that proposed formula's ability to predict real world service coverage is extremely poor. In addition, the study demonstrates that the proposed formulas produce contours that are significantly less than the approximate 20-mile service and 50-mile interference contours presently enjoyed by 900 MHz systems.

Propagation Study Number 2. Prediction of the propagation of 900 MHz facilities in the Atlanta area; 1000 watts ERP at antenna height of 494 meters (1605 feet). This study shows a reliable service area that would approximate 25 miles in all directions. The study demonstrates that, in the Atlanta area, the

¹⁷ A 20-mile service contour is the minimum service contour authorized under Section 22.537 of the Commission's Rules for 931 MHz systems. Because 929 MHz systems are the functional equivalent to 931 MHz systems, the 20-mile service contour should be equally applicable to 929 MHz facilities.

¹⁸ A 50-mile interference contour is the minimum service contour authorized under Section 22.537 of the Commission's Rules for 931 MHz systems. In addition, because the minimum co-channel separation standard for 929 MHz systems is 70 miles, assuming a service contour of twenty 20 miles, the interference contour for 929 MHz systems is also 50 miles.

formula is a poor predictor of real world service coverage. In addition, the study demonstrates that the proposed formulas produce contours that are significantly less than the 20-mile service and 50-mile interference contours presently enjoyed by 900 MHz systems.

Propagation Study Number 3. Prediction of the propagation of 900 MHz facilities in the San Francisco area; 1000 watts ERP at antenna height of 162 meters (526 feet). This study shows substantial reliable service area to the north, west and southeast of the transmitter. The study also shows that the proposed formula is a poor predictor of reliable service area because significant service area would not be encompassed into the systems' service area if the formula were used. In addition, the study demonstrates that the proposed formulas produce contours that are significantly less than the 20-mile service and 50-mile interference contours presently enjoyed by 900 MHz carriers.

Propagation Study Number 4. Prediction of the propagation of 900 MHz facilities in the Willimantic, CT area; 1000 watts ERP at antenna height of 372 meters (777 feet). This study shows additional significant reliable service area than would be predicated by the formula. The study demonstrates that proposed formula's ability to predict real world service coverage is extremely poor. In addition, the study demonstrates that the proposed formulas produce contours that are significantly less than the approximate 20-mile service and 50-mile interference contours presently enjoyed by 900 MHz systems.

Propagation Study Number 5. Prediction of the propagation of 900 MHz facilities in the San Diego, CA area; 1000 watts ERP at antenna height of 372 meters (504 feet). This study shows additional significant reliable service area than would be predicated by the formula. The study demonstrates that proposed formula's ability to predict real world service coverage is extremely poor. In addition, the study demonstrates that the proposed formulas produce contours that are significantly less than the approximate 20-mile service and 50-mile interference contours presently enjoyed by 900 MHz systems.

PageNet vigorously opposes the use of the formulas because they simply do not square with the current reliable service area and the interference area currently utilized by 900 MHz paging systems. As the studies graphically reflect, paging facilities provide reliable service well outside of the service contour calculated by the formula. In addition, when the propagation of the station is evaluated in the interference area, it is clear that the proposed formula for the interference contour would not properly work as a buffer for co-channel signals.¹⁹ Accordingly, the proposed formulas fall well short of actual reliable service areas and the area needed to maintain co-channel interference protection and must not be adopted.

The Commission must understand that these formulas are not easily used because there is no reliable and easily accessible source for the information needed to calculate the service and

¹⁹ See Trott Declaration at 2.

interference contours of a co-channel facilities by the formula. Currently, for the purposes of co-channel protection, a licensee need only know the coordinates of the co-channel facilities and class of station.²⁰ Under the formulas, the geographic licensee would have to know at a minimum the following regarding the incumbent facility:

- (1) The ground elevation;
- (2) The antenna height to tip;
- (3) The ERP;
- (4) Incumbent system's antenna type;
- (5) The orientation of the antenna (if not top mounted); and
- (6) Antenna pattern (if not omni-directional).

It should be emphasized that the required antenna information is not readily available. For 929 MHz stations, antenna information was generally not submitted as part of the application. For 931 MHz stations, because this antenna information is usually not on the license, the original application would have to be consulted for that information and for a copy of the antenna pattern. In addition, the formulas' reliability appears to be predicated on the use of a 3-second terrain database, rather than the current 30-second terrain database standard.²¹

²⁰ The vast majority of 931 MHz and 929 MHz paging systems are Class L stations. This designation which is still provided for under Section 90.495 of the Commission's Rules has been used for the designated of the minimum class of 900 MHz paging systems. At the minimum class or Class L, both 931 MHz and 929 MHz systems are entitled to a standard 70-mile separation distance from co-channel stations.

²¹ See 47 C.F.R. § 22.159.

Furthermore, the adoption of the formulas for future determinations of co-channel separation is much more difficult than the Commission anticipates. The geographic licensee would have to back-engineer incumbent co-channel sites to determine the placement of co-channel transmitters. This task is of course implausible because the information needed to calculate the formulas is not readily available.²² Accordingly, because the formulas do not accurately reflect actual service areas, do not provide for adequate interference protection, and are almost impossible for the geographic license to use, the Commission should not adopt the proposed formulas.

2. The Formulas Do Not Take Into Account Existing 931 MHz Fill-In Transmitters

In addition to not being reliable predictors of signal propagation, the formulas are flawed because they do not take into account that there are hundreds, if not thousands, of 931 MHz transmitters in existence today. If the service and interference contours of existing 931 MHz systems are reduced by the implementation of the formulas, and if the existing fill-ins are not grandfathered, carriers may be forced to terminate operation of fill-in transmitters because these fill-ins may not be completely encompassed by the system's composite interference contour and would then not be permissible.²³ This would

²² Even the Commission's records, which for 931 MHz and 929 MHz are at two different locations, are not always a reliable source of current system information.

²³ See 47 C.F.R. § 77.165(d)(1).